



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

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Project Title Predicting Real World Characteristics from Virtual Behavior	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In this study, I examined whether and how demographic profiling and personality are expressed in Virtual Worlds (VWs). The purpose of the study was to determine the accuracy rate with which real world demographics and personality traits can be predicted based on virtual behaviors. In this study, I predicted real world demographics such as age, gender, marital status, job status, education level, and nationality, and personality traits from the Big-5 Personality Model for 1,040 players from the US and Hong Kong/Taiwan. I hypothesized that real world characteristics can be predicted from virtual behavior.</p> <p>Methods/Materials Survey data from 1,040 World of Warcraft players, from the US and Hong Kong/Taiwan, containing demographic and personality variables was paired with their VW behavioral metrics over a four-month period. The VW behavioral metrics were gathered by two monitoring systems that tracked the players. From this data, 435 behavior variables were described, extracted, and analyzed.</p> <p>Results I predicted real world demographics such as age, gender, marital status, job status, education level, and nationality for the 1,040 players through machine learning methods. The results showed that one can predict age within +/- 4.7 years in terms of Mean Absolute Error. Prediction accuracy rates of demographic variables are as follows: gender is 73%, marital status is 68%, nationality is 70%, job status is 60%, and education level is 75%. I also predicted the personality traits of players from the Big-5 Personality Model: Extraversion, Agreeableness, Conscientiousness, Emotional stability, and Openness to experience based on the significant positive and negative correlations between the virtual behaviors and the personality factors. Many behavioral cues in VWs were found to be related to personality.</p> <p>Conclusions/Discussion In conclusion, virtual behavioral metrics can be used to provide statistically significant models of a player's personality and demographic profile. This study is relevant in the design of personalized interfaces, system customization, recommender systems, and online predictive analytics/ad supported services.</p>	
Summary Statement I predicted the real world demographics and personality traits of 1040 participants based on virtual behavior, using machine learning and behavioral statistics techniques..	
Help Received Discussed ideas with mentor	